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1. A chromatography column comprising a column having a stationary phase and a mobile phase, wherein said stationary phase comprises carbonaceous material having attached at least one organic group.

2. The chromatography column of claim 1, wherein said organic group comprises at least one aromatic group directly attached onto the carbonaceous material.

3. The chromatography column of claim 1, wherein said organic group comprises at least one alkyl group directly attached onto the carbonaceous material.

~~4.~~ ³⁸ The chromatography column of claim 1, further comprising a substance comprising chemical species to be separated in said column.

~~5.~~ ³⁹ A separation device comprising a mobile phase and a stationary phase, wherein said stationary phase comprises carbonaceous material having attached at least one organic group.

~~6.~~ ^{39 40} A method for conducting separation of chemical species from a substance, wherein said method comprises passing said substance through a system containing a mobile phase and a stationary phase, wherein said stationary phase comprises carbonaceous material having attached at least one organic group.

~~7.~~ ⁴⁰ The method of claim ~~6~~, wherein said separation is chromatography.

~~8.~~ ⁴¹ The method of claim ~~6~~, wherein said separation is size exclusion chromatography.

~~9.~~ ⁴² The method of claim ~~6~~, wherein said separation is chromatography by affinity wherein the chemical species in the substance have different affinities for the stationary phase.

~~10.~~ ⁴³ The method of claim ~~6~~, wherein said separation is an adsorption-desorption chromatography.

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16. ¹⁷ (Amended) The chromatography column of claim 1, wherein the organic group is a phenyl or naphthyl group having ionic or ionizable groups.

17. ¹⁷ (Amended) The chromatography column of claim 1, wherein the organic group comprises an amino acid or derivatized amino acid, cyclodextrin, immobilized protein, polypeptides, or combinations thereof.

18. ¹⁰ (Amended) The chromatography column of claim 1, wherein the organic group comprises a -C₆F₅ group, a trifluoromethyl-phenyl group, a bis-trifluorophenyl group, or combinations thereof.

19. ¹³ (Amended) The chromatography column of claim 1, wherein the organic group comprises -Ar-(C_nH_{2n+1})_x group, wherein n is an integer of from about 1 to about 30 and x is an integer of from about 1 to about 3.

20. ¹⁶ (Amended) The chromatography column of claim 1, wherein the organic group comprises cyclodextrin attached through an alkyl group.

21. ¹⁹ (Amended) The chromatography column of claim 1, wherein the organic group comprises polyethylene glycol or methoxy-terminated polyethylene glycol or derivatized resins thereof.

22. ²² (Amended) The chromatography column of claim 1, wherein the organic group comprises -Ar-((C_nH_{2n})COOX)_m, wherein Ar is an aromatic group, n is 0 to 20, m is 1 to 3, and X is H, a cation, or an organic group.

23. ²⁵ (Amended) The chromatography column of claim 1, wherein the organic group comprises Ar-((C_nH_{2n})OH)_m, wherein Ar is an aromatic group, n is 0 to 20, m is 1 to 3.

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~~24~~²⁰ (Amended) The chromatography column of claim 1, wherein the organic group comprises $-\text{Ar}-((\text{C}_n\text{H}_{2n})\text{NH}_2)_m$, wherein n is 0 to 20, m is 1 to 3, or its protonated form: $-\text{Ar}-((\text{C}_n\text{H}_{2n})\text{NH}_3\text{X})_m$, wherein X is an ion, and Ar is an aromatic group.

~~25~~³¹ (Amended) The chromatography column of claim 1, wherein the organic group comprises $-\text{Ar}-((\text{C}_n\text{H}_{2n})\text{CHNH}_3^+\text{COO}^-)_m$ and the reaction products thereof with molecules containing functional groups terminated in $-\text{NH}_2$, $-\text{OH}$, or $-\text{COOH}$, wherein Ar is an aromatic group and n is 0 to 20.

~~26~~³⁴ (Amended) The chromatography column of claim 1, wherein the organic group comprises $-\text{Ar}-((\text{C}_n\text{H}_{2n})\text{CH}=\text{CH}_2)_m$, wherein n is 0 to 20, m is 1 to 3 or $-\text{Ar}-((\text{C}_n\text{H}_{2n})\text{SO}_2\text{CH}=\text{CH}_2)_m$, where n is 0 to 20 and m is 1 to 3.

~~27~~³⁷ (Amended) The chromatography column of claim 1, wherein the organic group comprises at least one chiral ligand group.

~~28~~⁵ (Amended) The chromatography column of claim ~~16~~⁴, further comprising a second organic group attached on the carbonaceous material.

~~29~~⁸ (Amended) The chromatography column of claim ~~17~~⁷, further comprising a second organic group attached on the carbonaceous material.

~~30~~¹¹ (Amended) The chromatography column of claim ~~18~~¹⁰, further comprising a second organic group attached on the carbonaceous material.

~~31~~¹⁴ (Amended) The chromatography column of claim ~~19~~¹³, further comprising a second organic group attached on the carbonaceous material.

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~~32~~¹⁷ (Amended) The chromatography column of claim ~~20~~¹⁶, further comprising a second organic group attached on the carbonaceous material.

~~33~~²⁰ (Amended) The chromatography column of claim ~~21~~¹⁹, further comprising a second organic group attached on the carbonaceous material.

~~34~~²³ (Amended) The chromatography column of claim ~~22~~²², further comprising a second organic group attached on the carbonaceous material.

~~35~~²⁶ (Amended) The chromatography column of claim ~~23~~²⁵, further comprising a second organic group attached on the carbonaceous material.

~~36~~²⁹ (Amended) The chromatography column of claim ~~24~~²⁸, further comprising a second organic group attached on the carbonaceous material.

~~37~~³² (Amended) The chromatography column of claim ~~25~~³¹, further comprising a second organic group attached on the carbonaceous material.

~~38~~³⁵ (Amended) The chromatography column of claim ~~26~~³⁴, further comprising a second organic group attached on the carbonaceous material.

~~39~~⁶ (Amended) The chromatography column of claim ~~28~~^{5, 28}, wherein said second organic group has a shorter chain length or less steric hindrance than said organic group.

~~40~~⁹ (Amended) The chromatography column of claim ~~29~~⁸, wherein said second organic group has a shorter chain length or less steric hindrance than said organic group.

~~41~~¹² (Amended) The chromatography column of claim ~~30~~¹¹, wherein said second organic group has a shorter chain length or less steric hindrance than said organic group.

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~~42.~~¹⁵ (Amended) The chromatography column of claim ~~31.~~¹⁴, wherein said second organic group has a shorter chain length or less steric hindrance than said organic group.

~~43.~~¹⁸ (Amended) The chromatography column of claim ~~32.~~¹⁷, wherein said second organic group has a shorter chain length or less steric hindrance than said organic group.

~~44.~~²¹ (Amended) The chromatography column of claim ~~33.~~²⁰, wherein said second organic group has a shorter chain length or less steric hindrance than said organic group.

~~45.~~²⁴ (Amended) The chromatography column of claim ~~34.~~²³, wherein said second organic group has a shorter chain length or less steric hindrance than said organic group.

~~46.~~²⁷ (Amended) The chromatography column of claim ~~35.~~²⁶, wherein said second organic group has a shorter chain length or less steric hindrance than said organic group.

~~47.~~³⁰ (Amended) The chromatography column of claim ~~36.~~²⁹, wherein said second organic group has a shorter chain length or less steric hindrance than said organic group.

~~48.~~³³ (Amended) The chromatography column of claim ~~37.~~³², wherein said second organic group has a shorter chain length or less steric hindrance than said organic group.

~~49.~~³⁶ (Amended) The chromatography column of claim ~~38.~~³⁵, wherein said second organic group has a shorter chain length or less steric hindrance than said organic group.